

3M Quiz 6.1-6.4

Name: _____

1. Evaluate (no decimals)

$$\begin{aligned} \text{a) } -3^4 \\ = -81 \end{aligned}$$

$$\begin{aligned} \text{b) } (-6)^2 \\ = 36 \end{aligned}$$

$$\begin{aligned} \text{c) } 4^0 \\ = 1 \end{aligned}$$

$$\begin{aligned} \text{d) } 6^{-2} \\ = \frac{1}{36} \end{aligned}$$

$$\begin{aligned} \text{e) } 2^{-4} \\ = \frac{1}{16} \end{aligned}$$

$$\begin{aligned} \text{f) } 36^{\frac{1}{2}} \\ = \sqrt[2]{36} \\ = 6 \end{aligned}$$

$$\begin{aligned} \text{g) } 3^0 - 3^{-2} \\ = \frac{9}{9} - \frac{1}{9} \\ = \frac{8}{9} \end{aligned}$$

$$\begin{aligned} \text{h) } 5^{-2} - 2^{-3} \\ = \frac{1}{25} - \frac{1}{8} \\ = \frac{8}{200} - \frac{25}{200} \\ = -\frac{17}{200} \end{aligned}$$

$$\begin{aligned} \text{i) } 64^{\frac{2}{3}} \\ = (\sqrt[3]{64})^2 \\ = 16 \end{aligned}$$

2. Simplify (Express answers with positive exponents)

$$\begin{aligned} \text{a) } b \cdot b^3 \cdot b^4 \\ = b^8 \end{aligned}$$

$$\begin{aligned} \text{b) } (m^5)^3 \\ = m^{15} \end{aligned}$$

$$\begin{aligned} \text{c) } m^{-5} \cdot m^2 \\ = m^{-3} \\ = \frac{1}{m^3} \end{aligned}$$

$$\begin{aligned} \text{d) } (m^3 n^2)(m^5 n^6)^2 \\ (m^3 n^2)(m^{10} n^{12}) \\ m^{13} n^{14} \end{aligned}$$

$$\begin{aligned} \text{e) } m^7 \div m^{-4} \\ = m^{11} \end{aligned}$$

$$\begin{aligned} \text{f) } \left(\frac{a^2 b^{-4}}{a^5 b^2} \right)^2 \\ = \frac{a^4 b^{-8}}{a^{10} b^4} \\ = a^{-6} b^{-12} \\ = \left(\frac{1}{a^6} \right) \left(\frac{1}{b^{12}} \right) \end{aligned}$$

3. Express in radical form.

$$\begin{aligned} \text{a) } 32^{\frac{3}{5}} \\ = (\sqrt[5]{32})^3 \\ = \end{aligned}$$

$$\begin{aligned} \text{b) } -216^{\frac{1}{3}} \\ = -(\sqrt[3]{216}) \end{aligned}$$

$$\begin{aligned} \text{c) } 13^{\frac{1}{n}} \\ = \sqrt[n]{13} \end{aligned}$$

4. Simplify

$$\begin{aligned} \text{a) } \frac{x^{\frac{1}{2}} \times x^{\frac{2}{3}}}{x^{\frac{1}{4}}} \\ = x^{\frac{1}{2} + \frac{2}{3} - \frac{1}{4}} \\ = x^{\frac{6}{12} + \frac{8}{12} - \frac{3}{12}} \\ = x^{\frac{11}{12}} \end{aligned}$$

$$\begin{aligned} \text{b) } (y^{\frac{1}{2}})^3 \div (y^4)^{\frac{1}{2}} \\ = y^{\frac{3}{2}} \div y^2 \\ = y^{\frac{3}{2} - 2} \\ = y^{-\frac{1}{2}} \end{aligned}$$

$$\begin{aligned} \text{c) } \frac{(x^2 y^4)^{\frac{1}{2}} (x^4 y^2)^{\frac{1}{2}}}{(x^{\frac{1}{2}} y^{\frac{1}{2}})^4} \\ = \frac{(x^1 y^2)(x^2 y^1)}{x^2 y^2} \\ = \frac{x^3 y^3}{x^2 y^2} \end{aligned}$$

D = xy